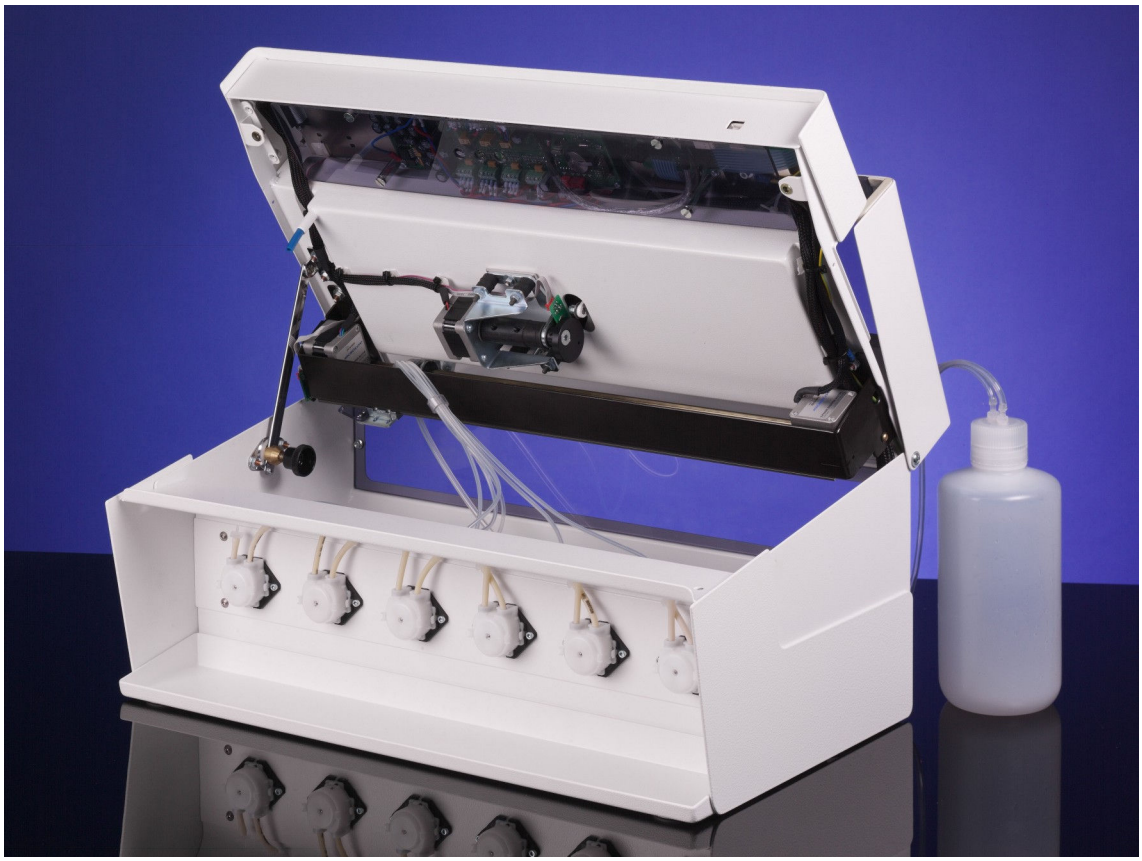
Instrument for the immunoblot processing

Dynablot



Service manual

CE

Rev. 2

The knowledge imparted by this manual is required for the some spare part replacing and adjusting of the instrument. Therefore please make yourself familiar with contents of this manual

Copyright

Copyright © Revised 2008 Dynex Technologies spol. s r.o..
All rights reserved. Reproduction of the accompanying user documentation in whole or in part is prohibited.

List of contents :

1 About this manual 1
2 Service menu – instrument settings a check 1
2.1 Components test 1
2.2 Home positions setting 3
2.3 The strip plate setting 4
2.4 Language version 5
2.5 Return to instrument main menu 6
3 The arms adjustment procedure 6
4 Hydraulic systems diagram 7
5 Tubing replacement 7
5.1 Dispensing tubing 7
5.2 Waste tubing 10
5.3 Vacuum and exhaust tubing replacement 11
6 Peristaltic pump head replacement 12

1 About this manual

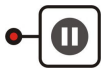
The Service manual has been written for the user (e.g. instruments technician) and provides information on the Dynablot instrument. This manual contains the components check, adjustment and part replacement instruction for the Dynablot instrument.

Read the manual in its entirely prior to servicing the instrument.

The Service manual joins with Dynablot Operating and maintenance manual which refers to it .

2 Service menu – instrument settings a check

WARNING !
The service menu functions could change instrument settins. Use them only with fully understanding.

Service menu is accesible from Main menu. Press simultaneously  and for 3 seconds.
Service menu consists of 4 items:

- Components test : checking of motors and pumps
- Home position – set : setting SW constants for arm shift and aspirate arm moving
- Plate - set : setting SW constants for used type of the strip plate
- Language version : setting man to machine dialogue language

2.1 Components test

By means of keys or select the function

```
Service:
Components test
```

```
Components test:
Arm shifts
```

```
Arm shifts:
ENTER:Home  +:right  -:left
```

- dispensing arm runs into the magnetic sensor from the right direction

- dispensing arm runs into next strip position to right direction up to last strip position

- dispensing arm runs into previous strip position to left direction up to home position

- return to Component test menu

By means of keys

or

select the function

```
Components test:
Aspirate arm
```

```
Aspirate arm:
ENTER:Home  +:up  -:down
```

- aspirating arm runs into the magnetic sensor from the down direction

- aspirating arm runs into upper position

- aspirating arm runs into down position

- return to Component tests menu

By means of keys

or

select the function

```
Components test:
Rocking
```

```
Rocking:
ENTER:Home  +:start  -:stop
```

- the strip plate rocking cam runs into the home magtetic sensor

- switch on the rocking stepper motor

- switch off the rocking stepper motor, the strip plate rocking carrier stops in the horizontal position

- return to Component tests menu

By means of keys

or

select the function

```
Components test:
Peristaltic pump
```

```
Peristaltic pump: Pump A
ENTER:next  +:forward  -:backward
```

- selecting of next pump (A,B,C,D,E,F,A,B,…….)

- switch on the pump motor in forward direction for about 2 seconds (dispensing)

- switch on the pump motor in backward direction for about 2 seconds (reagent saving)

- return to Component tests menu

By means of keys

or

select the function

```
Components test:
Aspirate pump
```

```
Aspirate pump
+:start  -:stop
```

- switch on the pump motor

- switch off the pump motor

- return to Component tests menu

2.2 Home positions setting

This menu enable to set the left - start position of the dispense arm (Arm shifts) and the lower position of the aspirating arm (Aspirate arm).

By means of keys

or

select the function

```
Service:
Home position-set
```

```
Home position-set:
Arm shifts
```

```
Arm shifts:
ENTER:Save  +:right  -:left
```

- arm runs into right direction by one microstep

- arm runs into left direction by one microstep

Set the position of the dispensing arm above the priming bowl. Both dispensing and aspirating tubes must lead to the bowl.

- the position of the arm saving

- return to Home position – set menu

By means of keys

or

select the function

```
Home position-set:
Aspirate arm
```

Insert the strip plate to the carrier. Setting. It is possible to set the aspirate arm position when the aspirate arm is adjusted for the used strip plate. (See capter The arms adjustment procedure).

```
Aspirate arm:
ENTER:Save  +:Up  -:Down
```

The aspirating arm goes above the first strip position.

- aspirating arm runs in up direction by one microstep

- aspirating arm runs in down direction by one microstep

Set the lower aspirating arm position. Run down the arm (button

) as long as the aspirating tube just touches the strip plate bottom. If you want to repeate setting procedure, the aspirating arm must be raised and again run down to the bottom position.

- constant of the actual arm position saving

- return to Home position – step menu

2.3 The strip plate setting

This menu enables to set the parametres of used strip plate.

By means of keys or select the function

Insert the strip plate to the carrier.

```
Service:
Plate setting
```

```
Set the 1-st strip:
ENTER:Save  +:right  -:left
```

or - dispensing arm runs into right direction by one microstep or about 5 mm step

or - dispensing arm runs into left direction by one microstep or about 5 mm step

Set the position of the dispensing arm. The dispensing tubes must lead to the center of the 1-st strip.

- the position of the arm saving

```
Set last strip:
ENTER:Save  +:right  -:left
```

or - dispensing arm runs into right direction by one microstep or about 5 mm step

or - dispensing arm runs into left direction by one microstep or about 5 mm

Set the position of the dispensing arm. The dispensing tubes must lead to the center of the last strip.

- the position of the arm saving

```
No. of strips:
00
```

By means of keys or set the number of strips at the plate.

- the new plate parameters calculating and saving

2.4 Language version

The instrument memory contains texts in 7 language version : English, Espanol, Portugues, Italiano, Turkce, Deutsch and Cesky. This menu enables to chose the language of displayed texts.

By means of keys

or

select the function

```
Service:
Language version
```

```
Language version:
English
```

By means of keys

or

select required language

setting of the selected language and return to Service menu

2.5 Return to instrument main menu

Press

in Service menu

```
Exit?
```

Yes – return to Main menu

No – remain in Service menu

3 The arms adjustment procedure

The arm adjustments consists of 4 successive steps:

1. The left - start position of the dispense arm (Home position – set/Arm shifts) (See previous capter)
2. The strip plate setting (See previous capter)
3. The aspirating arm mechanical adjustment (See next text)
4. The aspirate arm position setting (Home position – set /Aspirate arm)

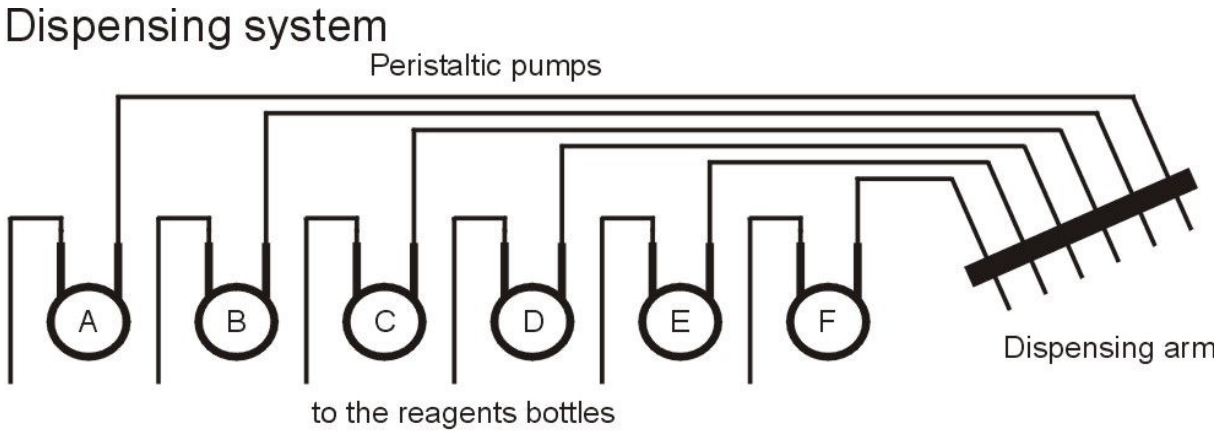
The aspirating arm mechanical adjustment
Insert the strip plate to carrier and position the dispense arm above the 1-st strip. Use menu Service/Components test/Arm shifts for this operation.
After that press ESC and open Service/Components test/Aspirate arm menu.

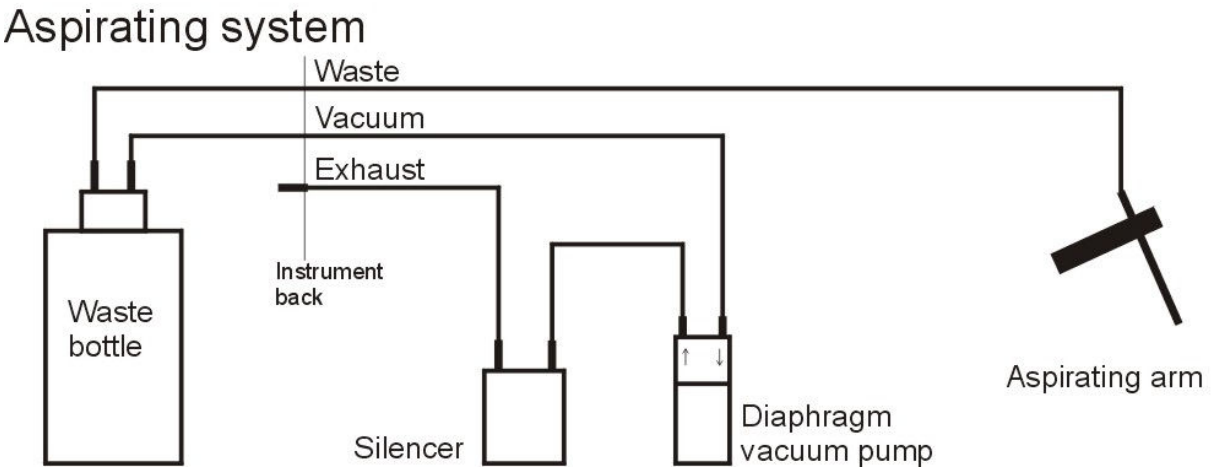
Now untighten two screws on the aspirating arm and place the aspirating tube above the center of the 2-nd strip. Then tighten screws and check movement of the aspirating arm By means of keys

and

. The aspirating tube must lead to the strip centre down corner (for the best strip content aspiration) but must not collide with the strip plate edge during its movement. Untighten two screws and make needed correction. After adjustment finishing tighten the screws well.

4 Hydraulic systems diagram





5 Tubing replacement

For access to instrument remove two screws in the top part of the peristaltic pumps area. Fold the top part of instrument and secure it in open position.

5.1 Dispensing tubing

Disconnect old tubes from the pump tube-to-tube connectors. Cut off plastic straps which secured tubes at lower part of dispensing arm. Remove old tubes.

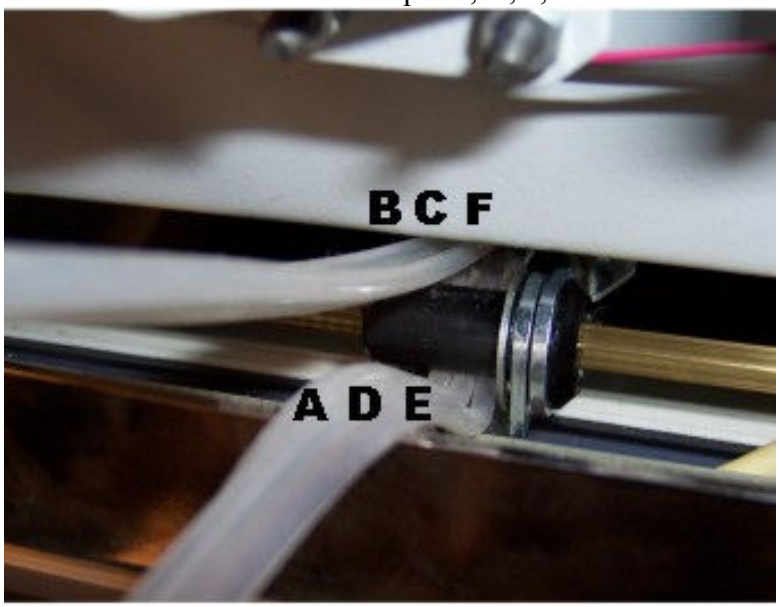
Prepare new tubes. (Silatic, Laboratory Tubing 508-008, 1,57mm x 3,18mm)
The tube lenghts table :

Chanel	Tube length (cm)
A	65
B	58
C	50
D	50
E	54
F	61

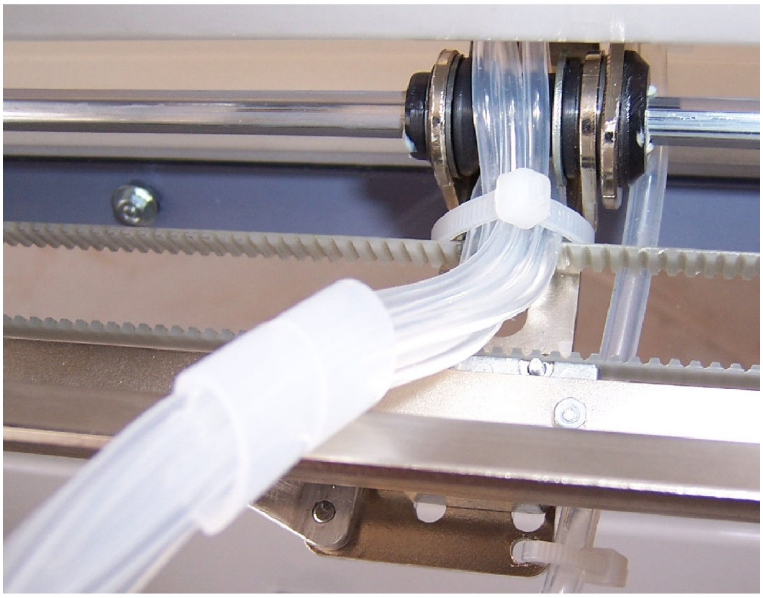
Install the new tubes. See next pictures.

Start inserting from the dispensing arm. Keep the chanel order.

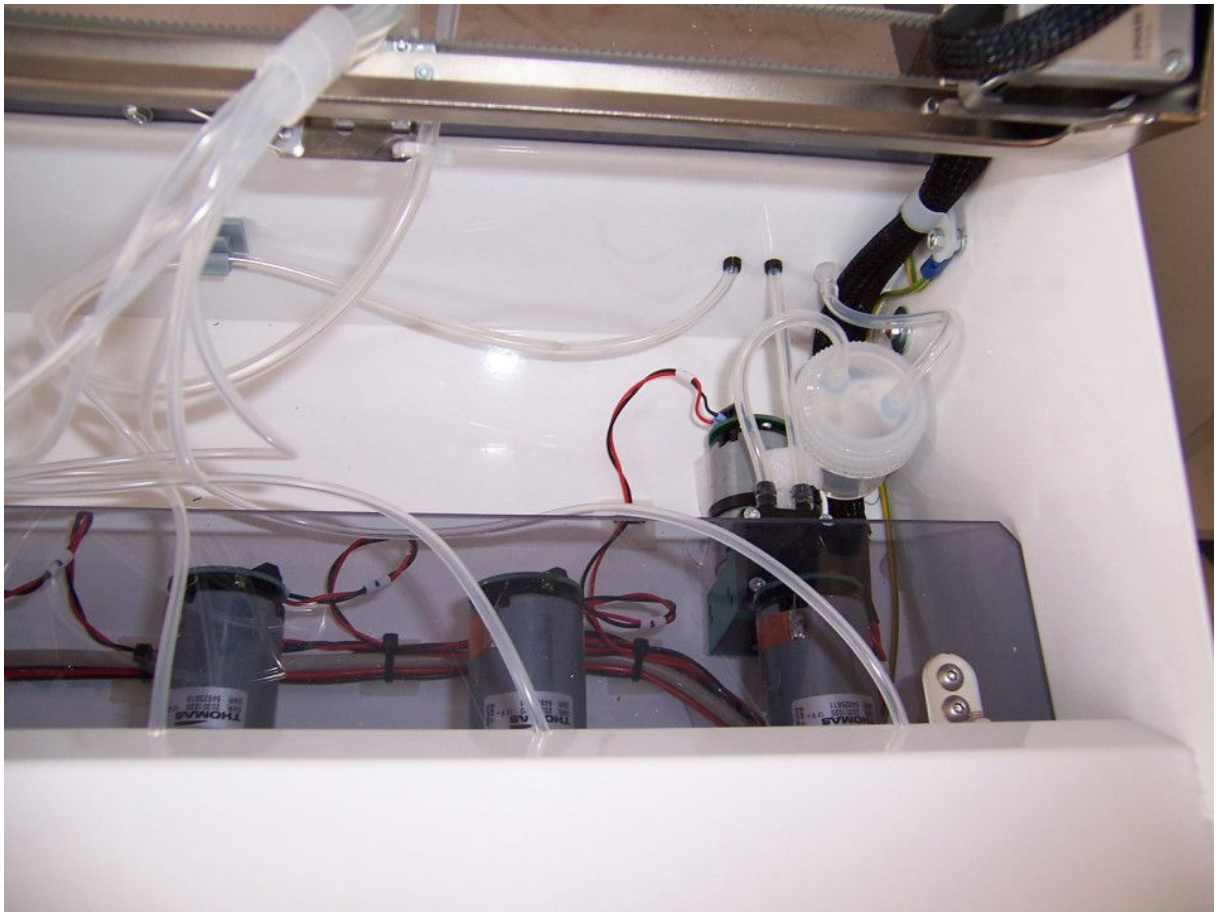
The tubec B,C,F are inserted in front of the arm pivot, A,D,E behind it.

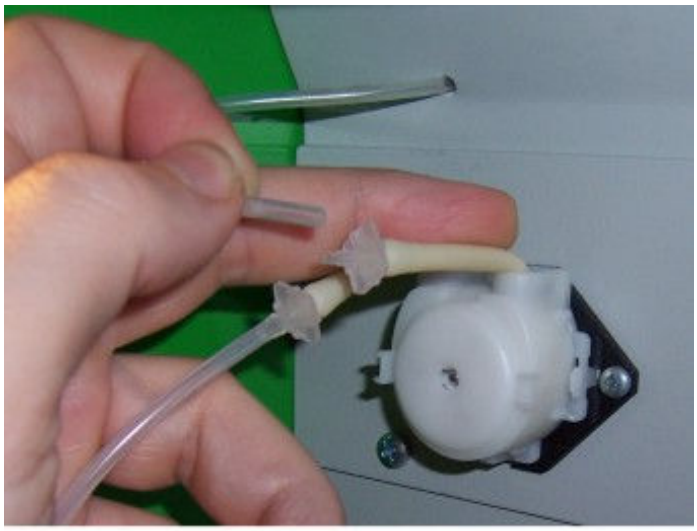


Secure the tubing by means of the plastic wrap to the dispensing arm body. Tight wrap carefully not to press dispense tubing.
Place the spiral belt aroud tubing



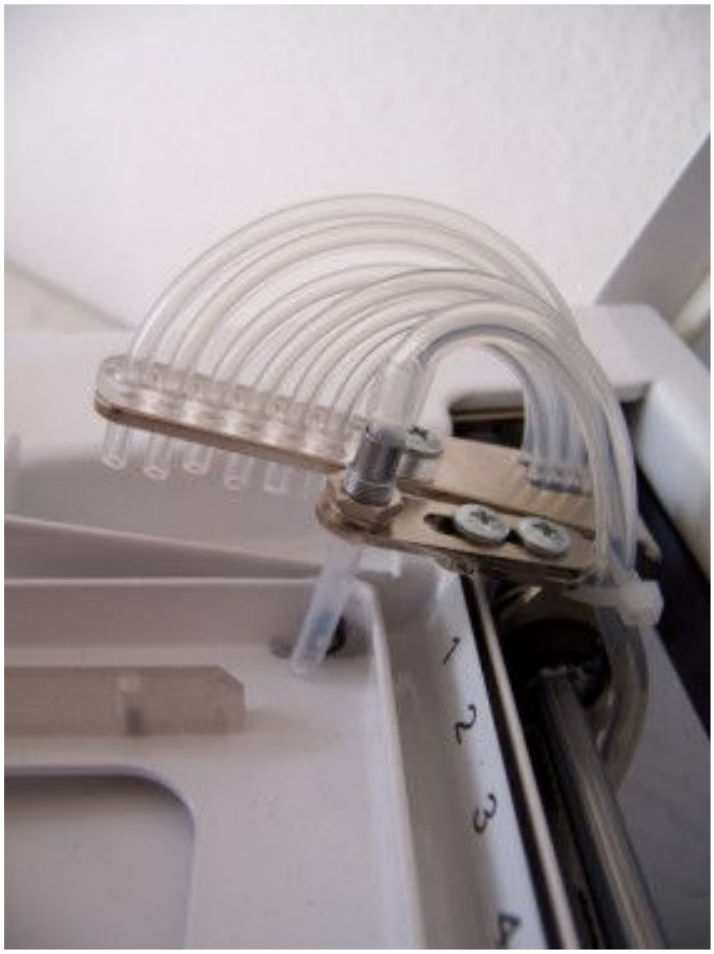
Poke the tubes through holes above the pumps and connect them to the tube-to-tube connectors of the rihgt pump tubes. The left pump tube is the input, the right tube is the output.





5.2 Waste tubing

Disconnect the tube from the pipe at the aspirating arm and remove it.
Prepare the new tube (Silatic, Laboratory Tubing 508-010, 2,64mm x 4,88mm), lenght 110cm.
Connect the new tube to the aspirating arm pipe, then along the arm back side to the instrument inside. Secure the tube to top and bottom side of the arm and to plastic holder at the back instrument side. Then poke the tube by hole Waste in the back side of the instrument
Connect the new tube to the waste bottle to outlet with short tube inside the bottle.

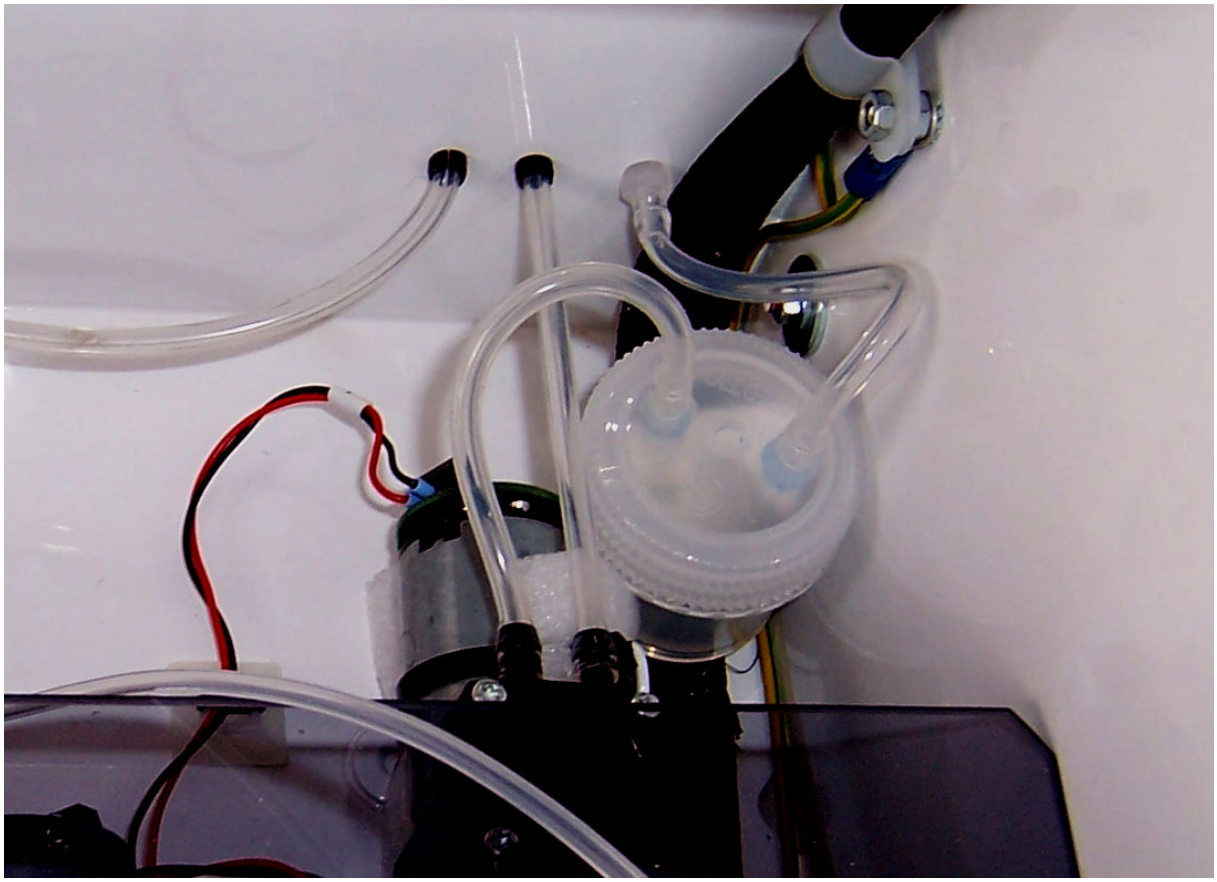


5.3 Vacuum and exhaust tubing replacement

Disconnect the tubes from the diaphragm pump remove them from instrument and disconnect silencer.
Prepare the new tube (Silatic, Laboratory Tubing 508-010, 2,64mm x 4,88mm)
The tube lenghts table :

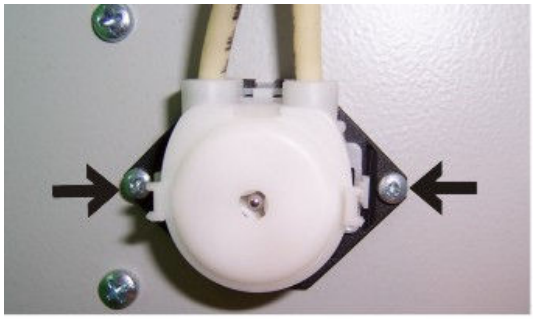
Tube position	Tube length (cm)
Diaphragm pump input – waste bottle	60
Diaphragm pump output – silencer	11
Silencer - exhaust	11

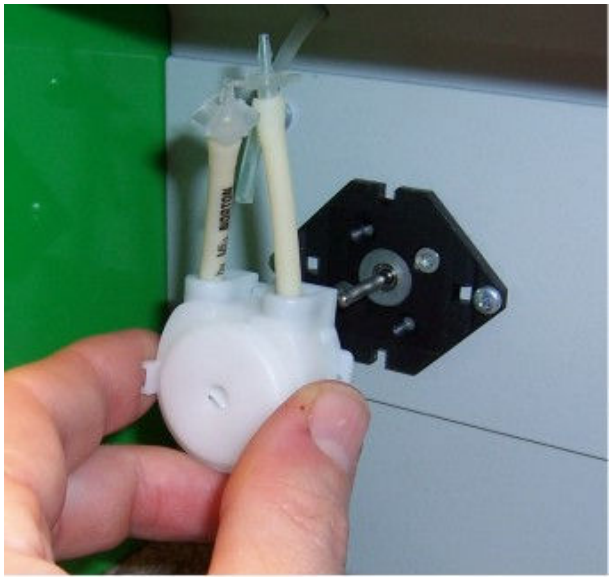
Clean the silencer inside and connect 2 short bubes to its outlets. Put silencer to the instrument and connect ist tubing to the pump output and the exhaust at back side of the instrument. Pay attention, the tube from the pump output must be connected to silencer outlet with short tube inside it. Then poke the long tube by hole Vacuum in the back side of the instrument and connent it to the diaphragm pump input and the waste bottle outlet (without short tube inside the bottle).



6 Peristaltic pump head replacement

Remove the old peristaltic pump head. Push the locks (marked by arrows in the picture) and pull the head from the motor shaft.





Equip the new head tube by 2 pieces tube-to-tube connector (AC-6). Push the black tool to hole in the front side of the head and mount the head on the motor shaft. Také care to get back the lock well.